Montana Department of
ENVIRONMENTAL QUALITY
WATER PROTECTION BUREAU

Agency Use	
Permit No.:	MTG010246
Date Rec'd	12/14/11
Rec'd By	N.U.

FORM
NMP

Nutrient Management Plan

READ THIS BEFORE COMPLETING FORM: Before completing this form (Form NMP), Concentrated Animal Feeding Operation (CAFO) operators need to read the General Permit, particularly Part IV.A. CAFO operators also need to read the "Instructions For Filling Out Form NMP," found at the back of the Form. Form NMP is intended to help CAFO operators develop a site-specific Nutrient Management Plan, in compliance with Part IV.A of the General Permit and all applicable State rules and statutes. Your Nutrient Management Plan must be maintained at the site as required in Part III of the General Permit. Sections B and C on your Form NMP must state the information exactly the same way as it was stated on the most recently submitted version of your Form 2B. Attach additional pages as necessary, indicating the corresponding section number on this NMP form. For additional help in filling out this form please read the attached instructions. The 2008 General Permit, current fee schedule, and related forms are available from the Water Protection Bureau at (406) 444-3080 or http://www.deq.mt.gov/wqinfo/MPDES/CAFO.asp

Section A - NMP Status *(Check one):*

☐ New — No prior NMP submitted for this site.

■ Modification — Change or update to existing NMP.

Permit Number: MT G010246 (Specify the permit number that was previously assigned to your facility.)

Section B - Facility or Site Information:

Site Name Centana Feeders LLC

Site Location 433 Montaqua Rd.

Nearest City or Town Joliet, MT 59041 County Carbon

Section C - Applicant (Owner/Operator) Information:

Owner or Operator Name Steven D. Nelson

Mailing Address 320 South 24th Street

City, State, and Zip Code Billings, MT 59101

Phone Number 406-252-8624

RECEIVED
DEC 14 2011
DEQ/WPB
PERMITTING & COMPLIANCE DIV.

COPY

Section D - NMP Minimum Elements:

1. Livestock Statistics

Animal Type and number of animals	*# of Days on Site (per year)*	*Annual Manure Production (tons, cu. yds.or gal)*
1. 2000 grass stockers (ave wt - 585	200	1,432T
2. 2000 max gain calves (ave wt - 725#)	200	822T
3. 800 cows (ave wt - 1,300#)	200	922T
4.		
5.		
6.		
7.		
8.		

Method used for estimating annual manure production:

MT DEQ Circular 9, Table 1, pages 12 & 13.

2. Manure Handling

Describe manure handling at the facility:

Pens are scraped in late summer and manure is piled in the center. Some is hauled to dryland area southwest of Big field. Once crops are harvested, manure is applied to fields with Olsen soil test P < 150 ppm. Manure is hauled to other fields from pens. Approximately 2/3 of manure produced is loaded onto trucks of neighboring farmers to be spread on their farms. Run-off is contained in four ponds. When they are full, the liquid is pumped to storage pond on top of hill.

Frequency of Manure Removal from confinement areas:

Annually in September/October.

Is this manure temporarily stored in any location other than the confinement area? ☑ Yes ☐ No

If so then how and where? If manure is to be applied to the Big field, manure is moved from pens to stockpile located on dryland range southwest of the Big field. It is them reloaded onto spreader trucks once crops are off and spread onto this field.

Is manure stored on impervious surface? ☐ Yes ☑ No

If yes, describe type and characteristics of this surface:

3. Waste Control Structures

Waste Control Structure (name/type)	*Length (ft)*	*Width (ft)*	*Depth (ft)*	*Volume (cubic ft or gallons)*
1. South - east pond	50	20	5	37,280 gals
2. South - west pond	75	25	6	83,870 gals
3. WSP-1	130	66	8	321,750 gals
4. WSP-2	200	76	5	422,500 gals
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				

4. Disposal of Dead Animals

Describe how dead animals are disposed of at this facility:

They are buried in an approved pit on top of the hill, about 1/4 mile east of the feedlot. Animals are placed in the pit every 2-3 days and soil is placed on top of them ASAP.

5. Clean Water Diversion Practices

Describe how clean water is diverted from production area:

Fence lines are higher than roads and pens, creating a natural dike. Feed bunks also divert clean run-off water from entering pens.

6. Prohibiting Animals and Wastes from Contact with State Waters

Describe how animals and wastes are prohibited from direct contact with state waters:

All animals are fenced away from state waters. Waste is kept from state waters by having 4 sediment ponds downslope from pens. South - east and South - west ponds are to be relocated to the east because of a groundwater issue. Liquid in ponds is then pumped to main storage pond on top of hill. If necessary, liquid from this pond is applied to the Stalks field. Application from the main pond has not been necessary yet. Manure application set backs are maintain on lower ends of fields to keep manure from entering state waters.

Describe how chemicals and other contaminants are handled on-site:

Cattle insecticides and antibiotics are kept in a locked room in the processing facility. This room is locked every night. Schlemmer Farms applies farm chemicals. They keep those pesticides at their farm, 4-5 miles away from CenTana.

8. Best Management Practice (BMPS)

Describe in detail all temporary, permanent and structural Best Management Practices (BMPs) which will be used to control runoff of pollutants from facility's **production area**. Indicate the location of these measures. Include a schedule for implementation of each of these measures. Examples of BMP measures could include but are not limited to: constructing ditches, terraces, and waterways above an open lot to divert clean water run on; installing gutters, downspouts and buried conduits to divert roof drainage; providing more roofed area; decreasing open lot surface area; repairing or adjusting water systems to minimize water wastage; using practical amounts of water for cooling purposes; recycling water if practical and applicable.

There are rain gutters on the building where the cattle are worked. Waterers are fixed as soon as a problem is observed. Maintain fence berms to keep water out of pens.

Describe in detail all temporary, permanent and structural Best Management Practices (BMPs) which will be used to control runoff of pollutants from facility's **land application area**. Indicate the location of these practices. If not already in use, include a schedule for implementation of each of these measures. Attached details and specifications may be used to supplement this description. Examples of BMP measures could include but are not limited to: maintaining setbacks from surface waters for manure applications; managing irrigation practices to prevent ponding of wastewater on land application sites; never spray irrigating wastes onto frozen ground; consulting with the Department prior to applying any liquid waste to frozen or snow-covered ground; applying wastes at agronomic rates.

Plant sampling/tissue analysis	yes/no ✓	Rotational grazing	yes/no ✓
Conservation or reduced tillage	✓ yes/no	Manure injection or incorporation	yes/no ✓
Terraces or other water control structures	yes/no ✓	Contour plantings	yes/no ✓
Riparian buffers or vegetative filter strips	✓ yes/no	Winter "scavenger" or cover crops	yes/no ✓

Other examples Apply manure to non-frozen soil. Apply manure at agronomic rates. Soil test each fall. Maintain manure application setbacks at lower end of fields. Incorporate manure ASAP.

9. Implementation, Operation, Maintenance and Record Keeping – Guidance

The permittee is required to develop guidance addressing implementation of NMP, proper operation and maintenance of the facility, and record keeping as described in Part II of the permit.

Has a guidance document been developed for the facility? ✓ Yes No

Certify the document addresses the following requirements:

Implementation of the NMP:	✓ Yes	No
Facility operation and maintenance:	✓ Yes	No
Record keeping and reporting:	✓ Yes	No
Sample collection and analysis:	✓ Yes	No
Manure transfer:	✓ Yes	No

Provide name, date and location of most recent documentation:

Comprehensive Nutrient Management Plan for CenTena Feeders, written on 12/20/06 by Neal E. Fehringer, Certified Professional Agronomist, C.C.A, Certified CNMP Planner. It is located at CenTana Feeders' office. Also have 2008 NMP.

If your answer to any of the above question is no, provide explanation

Section E – Land Application

Will manure be land applied to land either owned, rented, or leased by the owner or operator of the facility?

No If no, then provide an explanation of how animal waste at this site are managed.

■ Yes If yes, then the information requested in Section E must be provided.

Yes, only to those field(s) that have an Olsen P test level < 150 ppm.

Photos and/or Maps

Attach an aerial photograph or map of the site where manure is to be applied. (Use multiple photos/maps if necessary to show required details.) The photo(s)/map(s) must be printed on no larger than an 11"x17" piece of paper, and must clearly identify the following items:

- Individual field boundaries for all planned land application areas
- A name, number, letter or other means of identifying each individual land application field
- The location of any down-gradient surface waters
- The location of any down-gradient open tile line intake structures
- The location of any down-gradient sinkholes
- The location of any down-gradient agricultural well heads
- The location of all conduits to surface waters
- The specific manure/waste handling or nutrient management restrictions associated with each land application field.
- The soil type(s) present and their locations within the individual land application field(s)
- The location of buffers and setbacks around state surface waters, well heads, etc.

Land Application Equipment Calibration

Describe the type of equipment used to land apply wastes and the calibrating procedures:

Tandem axle truck with 15 ton spreader box is used to apply manure. It is calibrated by weighing manure and determining how much area it covers.

Manure Sampling and Analysis Procedures

A representative manure sample will be analyzed a minimum of once annually for Total Nitrogen, and Total Phosphorus. Analysis results will be reported in lbs/ton or lbs/1,000 gal. Results of these analyses will be used in determining application rates for manure, litter, and process wastewater.

Manure Sample collection will occur according to the following method:

The recommended method(s) found in Section 5 of Department Circular DEQ 9

■ Other (describe) Use 42" hand soil probe to obtain manure from piles in pens.

Soil Sampling and Analysis Procedures

A representative soil sample from the top 6 inch layer of soil in each field will be analyzed for phosphorus content at least once every five years. Analyses will be conducted by a qualified laboratory, using the Olsen P test. Results will be reported in parts per million (ppm) and will be used in determining application rates for manure, litter, and process wastewater.

Soil sample collection will occur according to the following method:

The recommended method(s) found in Section 5 of Department Circular DEQ 9

■ Other (describe) (10) 0-6" and (5) 6-24" cores are systematically taken from each field annually.

Land Application Data-Narrative approach

The following must be filled out for each field to which manure, litter or process wastewater will or may be applied for the period of the permit (5 years). Use as many sheets as necessary to fulfill this requirement. **Fields with identical crops and soil types may be grouped together.**

Crops and Manure	
Field Name and spreadable acres for each (for fields with identical crops and soils type): Big (72 acres) in Crop 1 section.	
Crop 1 (year 1 or ?) plant species	Big: Corn
Irrigated (Y/N)	Yes
Yield Goal (ton/ac or bushel/ac)	30 tons per acre.
N Content of soil as nitrate (lbs/acre or ppm)	40-69 #/ac in top 2 feet in fall 2011.
P Content of soil as P_2O_5 (lbs/acre or ppm)	126-147 ppm Olsen P in 0-6" depth in fall 2011.
Time of Year When Application will Occur (month)	September/October
Application frequency (per year by month)	Once in September/October
Form of manure (liquid/solid)	Solid
Method of Application	Surface spread
Is manure incorporated or broadcast?	Once in September/October
Frequency of Application (yearly, biannual, etc.?)	Annually
Crop 2	Big: Wheat
Irrigated (Y/N)	Yes
Yield Goal (ton/ac or bushel/ac)	100 bu/ac
N Content of soil as Nitrate (lbs/acre or ppm)	40-69 #/ac in top 2 feet in fall 2011.
P Content of soil as P_2O_5 (lbs/acre or ppm)	26-147 ppm Olsen P in 0-6" depth in fall 2011.
Time of Year When Application will Occur (month)	September/October
Application frequency (per year, by month)	Once in September/October
Form of manure (liquid/solid)	Solid
Method of Application	Surface spread
Is manure broadcast, injected or incorporated?	Once in September/October
Frequency of Application (Annual, Biannual, ,etc?)	Annually

Land Application Data-Narrative approach

The following must be filled out for each field to which manure, litter or process wastewater will or may be applied for the period of the permit (5 years). Use as many sheets as necessary to fulfill this requirement. **Fields with identical crops and soil types may be grouped together.**

Crops and Manure

Field Name and spreadable acres for each (for fields with identical crops and soils type):

Yellow House (12 acres)

Crop 1 (year 1 or ?) plant species	Yellow House: Corn
Irrigated (Y/N)	Yes
Yield Goal (ton/ac or bushel/ac)	30 tons per acre.
N Content of soil as nitrate (lbs/acre or ppm)	70 #/ac in top 2 feet in fall 2011.
P Content of soil as P_2O_5 (lbs/acre or ppm)	149 ppm Olsen P in 0-6" depth in fall 2011.
Time of Year When Application will Occur (month)	September/October
Application frequency (per year by month)	Once in September/October
Form of manure (liquid/solid)	Solid
Method of Application	Surface spread
Is manure incorporated or broadcast?	Once in September/October
Frequency of Application (yearly, biannual, etc.?)	Annually
Crop 2	Yellow House: Wheat
Irrigated (Y/N)	Yes
Yield Goal (ton/ac or bushel/ac)	100 bu/ac
N Content of soil as Nitrate (lbs/acre or ppm)	70 #/ac in top 2 feet in fall 2011.
P Content of soil as P_2O_5 (lbs/acre or ppm)	149 ppm Olsen P in 0-6" depth in fall 2011.
Time of Year When Application will Occur (month)	September/October
Application frequency (per year, by month)	Once in September/October
Form of manure (liquid/solid)	Solid
Method of Application	Surface spread
Is manure broadcast, injected or incorporated?	Once in September/October
Frequency of Application (Annual, Biannual, ,etc?)	Annually

Phosphorus Risk Assessment

The permittee shall assess the risk of phosphorus contamination of state waters. An assessment shall be conducted for each field, under the control of the operator, to which manure, litter or process wastewater will or may be applied. If a new field is added in the future, then the permittee must submit a revised (modified) NMP. The permittee has the option of using either Method A or Method B (below) to complete the assessment. Copies of all tables and calculations used to complete the assessments, as well as the results of the assessments, shall be submitted to the Department and copies shall be maintained on-site at the facility and available for Departmental review. The results of the assessments shall be used to determine the appropriate basis for land application of wastes from the facility.

Method Used

Indicate which method will be used to determine phosphorus application:

■ Method A – Representative Soil Sample
Method B – Phosphorus Index

Method A – Representative Soil Sample

a) Obtain one or more representative soil sample(s) from the field.
b) Have the sample analyzed for Phosphorus by a qualified lab. The "Olsen P test" must be used for the analysis, and the result must be reported in parts per million (ppm).
c) Using the results of the Olsen P test, determine the application basis according to the Table below

Soil Test	
Olsen P Soil Test Result (ppm)	***Application Basis***
<25.0	Nitrogen Needs Of Crop
25.1 - 100.0	Phosphorus Needs Of Crop
100.0 - 150.0	Phosphorus Needs up to Crop Removal Rate
>150.0	No Application

Method B – Phosphorus Index

a) Complete a Phosphorus Index according to for each crop grown on each field. Complete table in Appendix A to calculate phosphorus index. For information on filling out specific sections Appendix A, please refer to Attachment 2 of Department Circular DEQ 9.
b) Using the calculated Total Phosphorus Index Value, assign the overall site/field vulnerability to phosphorus loss according to the table below.

Total Phosphorus	
Total Phosphorus Index Value	***Site Vulnerability to Phosphorus Loss***
<11	Low
11-21	Medium
22-43	High
>43	Very High

c) Using the calculated Site Vulnerability to Phosphorus Loss, determine the appropriate application basis according to the table below.

Site Vulnerability to Phosphorus Loss	
Site Vulnerability to Phosphorus Loss	***Application Basis***
Low	Nitrogen Needs
Medium	Nitrogen Needs
High	Phosphorus Need Up to Crop Removal
Very High	Phosphorus Crop Removal or No Application

d) The permittee will complete the *Nutrient Budget Worksheet*, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

Nutrient Budget Worksheet

Site/Field: Big - Corn

	Nutrient Budget	*Nitrogen-based Application*	*Phosphorus-based Application*
	Crop Nutrient Needs, lbs/acre included in Department Circular DEQ 9		155
(-)	Credits from previous legume crops, lbs/acre (from DEQ-9), as applicable		0
(-)	Residuals from past manure production, lbs/acre (lbs/acre applied in previous year(s) x fractions listed in DEQ-9)		0
(-)	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre		0
(-)	Nutrients supplied in irrigation water, lbs/acre		0
	= Additional Nutrients Needed, lbs/acre		155
	Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1,000 gal (from manure test)		12.9
(x)	Nutrient Avalability factor (for Nitrogen based application see DEQ-9, below; for Phosphorus based application use 1.0)		1.0
	= Available Nutrients in Manure, lbs/ton or lbs/1,000 gal		12.9
	Additional Nutrients needed, lbs/acre (calculated above)		0
(/)	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal (calculated above)		12.9
	= Manure Application Rate, tons/acre or 1,000 gal/acre		12T

Comments:

There was 15T/Ac applied fall 2011 to Big field. Using 2010 manure analysis. 2011 test results are not back from lab yet.

Figuring 30 T/Ac silage would be comparable to 200 bu per acre corn and 4 tons per acre stover for a total of 155 pounds phosphate removed by the crop per acre.

d) The permittee will complete the *Nutrient Budget Worksheet*, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

Nutrient Budget Worksheet

Site/Field: Big - Wheat

	Nutrient Budget	***Nitrogen-based Application***	***Phosphorus-based Application***
	Crop Nutrient Needs, lbs/acre included in Department Circular DEQ 9		73
(-)	Credits from previous legume crops, lbs/acre (from DEQ-9), as applicable		0
(-)	Residuals from past manure production, lbs/acre (lbs/acre applied in previous year(s) x fractions listed in DEQ-9)		0
(-)	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre		0
(-)	Nutrients supplied in irrigation water, lbs/acre		0
	= Additional Nutrients Needed, lbs/acre		73
	Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1,000 gal (from manure test)		12.9
(x)	Nutrient Avalability factor (for Nitrogen based application see DEQ-9, below; for Phosphorus based application use 1.0)		1.0
	= Available Nutrients in Manure, lbs/ton or lbs/1,000 gal		12.9
	Additional Nutrients needed, lbs/acre (calculated above)		0
(/)	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal (calculated above)		12.9
	= Manure Application Rate, tons/acre or 1,000 gal/acre		5.6T

Comments:

There was 15T/Ac applied fall 2011 to Big field. Using 2010 manure analysis. 2011 test results are not back from lab yet.

Figuring 100 bu per acre wheat and 3 tons per acre straw for a total of 73 pounds phosphate per acre removed by the crop.

d) The permittee will complete the *Nutrient Budget Worksheet*, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

Nutrient Budget Worksheet

Site/Field: Yellow House - Corn

	Nutrient Budget	*Nitrogen-based Application*	*Phosphorus-based Application*
	Crop Nutrient Needs, lbs/acre included in Department Circular DEQ 9		155
(-)	Credits from previous legume crops, lbs/acre (from DEQ-9), as applicable		0
(-)	Residuals from past manure production, lbs/acre (lbs/acre applied in previous year(s) x fractions listed in DEQ-9)		0
(-)	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre		0
(-)	Nutrients supplied in irrigation water, lbs/acre		0
	= Additional Nutrients Needed, lbs/acre		155
	Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1,000 gal (from manure test)		12.9
(x)	Nutrient Avalability factor (for Nitrogen based application see DEQ-9, below; for Phosphorus based application use 1.0)		1.0
	= Available Nutrients in Manure, lbs/ton or lbs/1,000 gal		12.9
	Additional Nutrients needed, lbs/acre (calculated above)		155
(/)	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal (calculated above)		12.9
	= Manure Application Rate, tons/acre or 1,000 gal/acre		12.0

Comments:

There was no manure applied fall 2011 to Yellow House field. Using 2010 manure analysis. 2011 test results are not back from lab yet.

Figuring 30 T/Ac silage would be comparable to 200 bu per acre corn and 4 tons per acre stover for a total of 155 pounds phosphate removed by the crop per acre.

d) The permittee will complete the *Nutrient Budget Worksheet*, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

Nutrient Budget Worksheet

Site/Field: Yellow House - Wheat

	Nutrient Budget	***Nitrogen-based Application***	***Phosphorus-based Application***
	Crop Nutrient Needs, lbs/acre included in Department Circular DEQ 9		73
(-)	Credits from previous legume crops, lbs/acre (from DEQ-9), as applicable		0
(-)	Residuals from past manure production, lbs/acre (lbs/acre applied in previous year(s) x fractions listed in DEQ-9)		0
(-)	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre		0
(-)	Nutrients supplied in irrigation water, lbs/acre		0
	= Additional Nutrients Needed, lbs/acre		73
	Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1,000 gal (from manure test)		12.9
(x)	Nutrient Avalability factor (for Nitrogen based application see DEQ-9, below; for Phosphorus based application use 1.0)		1.0
	= Available Nutrients in Manure, lbs/ton or lbs/1,000 gal		12.9
	Additional Nutrients needed, lbs/acre (calculated above)		73
(/)	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal (calculated above)		12.9
	= Manure Application Rate, tons/acre or 1,000 gal/acre		5.6T

Comments:

There was no manure applied fall 2011 to Yellow House field. Using 2010 manure analysis.

2011 test results are not back from lab yet.

Figuring 100 bu per acre wheat and 3 tons per acre straw for a total of 73 pounds phosphate per acre removed by the crop.

Section F - CERTIFICATION

Permittee Information:

This Form NMP must be completed, signed, and certified as follows:

- For a corporation, by a principal officer of at least the level of vice president;
- For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
- For a municipality, state, federal, or other public facility, by either a principal executive officer or ranking elected official.

All Permittees Must Complete the Following Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information; including the possibility of fine and imprisonment for knowing violations. [75-5-633, MCA]

A. Name (Type or Print)

Steven D. Nelson

RECEIVED
DEC 14 2011
DEQ/WPB
PERMITTING & COMPLIANCE DIV.

B. Title (Type or Print)

Managing Director

C. Phone No.

406-252-8624

D. Signature

E. Date Signed

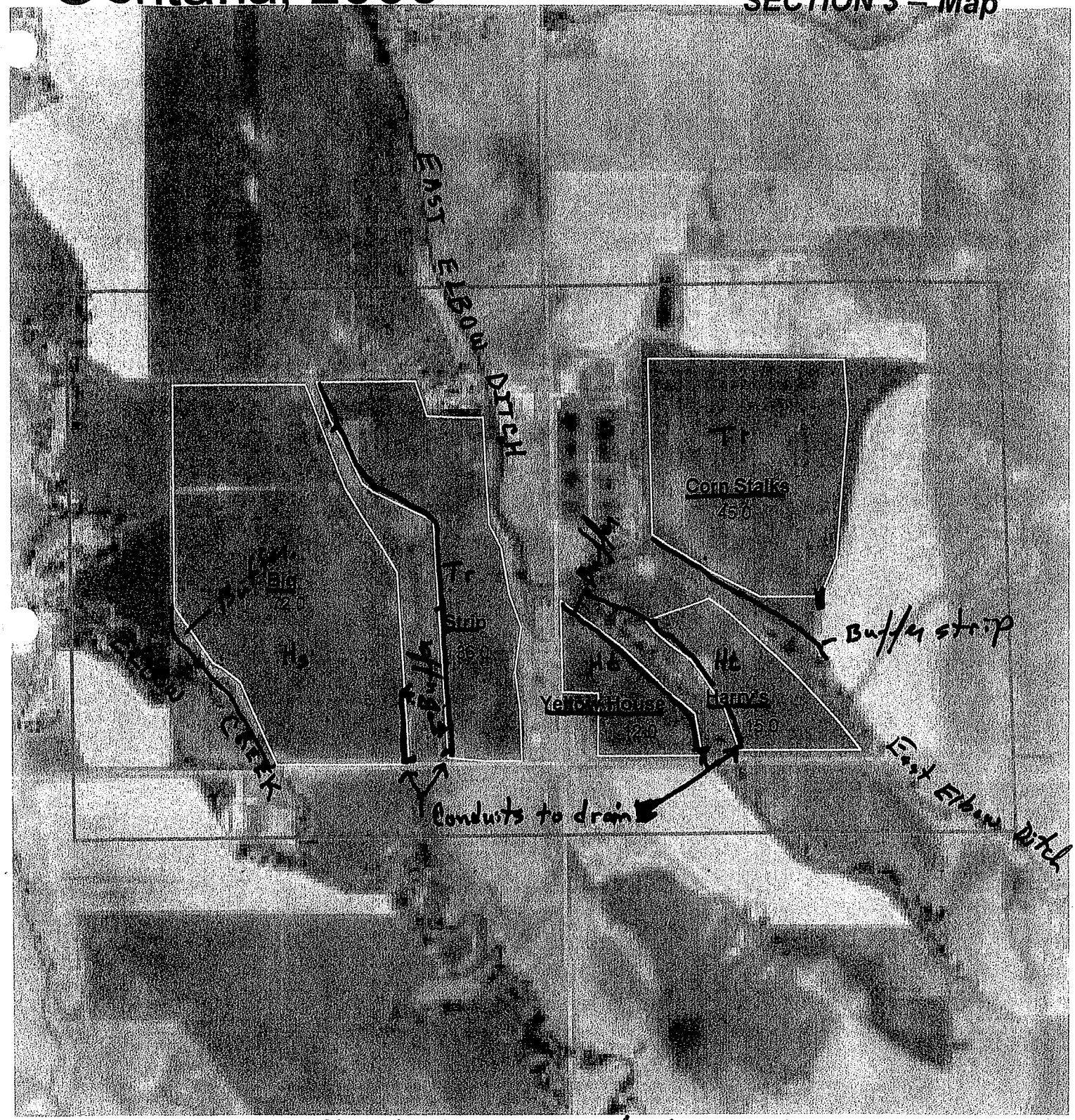
12/12/11

Return the Form NMP, Nutrient Management Plan to:

Department of Environmental Quality
Water Protection Bureau
PO Box 200901
Helena, MT 59620-0901
(406) 444-3080

Centana, 2006

SECTION 3 – Map



Hs - Heldt silty clay loam, 0-2% slope
Ht - Heldt silty clay loam, 2-4% slope
Tr - Toluca clay loam, 4-8% slope

No down gradient tiles, sinkholes, ag well heads,

Field Name
Acres

0 1000 2000 3000 Feet

N
W E
S

Centana Feeders

2011-2012 Estimated Annual Manure Production

				Manure			
Animal Group	No.	Ave Wt.	Days Fed	cu. ft. per day	Excreted Moist, %	Spread Moist, %	Est. Tons
Grass Stockers	2,000	585	200	0.99	92	30	1,432
Max Gain Calves	2,000	725	200	0.57	92	30	822
Cows	800	1,300	200	1.07	88	30	922
TOTAL	4,800						

TOTAL ESTIMATED SPREADABLE MANURE PRODUCED **3,176**

Manure production estimated by using figures from Table 1: Daily Manure Production, as excreted, on pages 12 & 13 in Montana DEQ Circular 9.

Table compiled by Neal E. Fehringer, Certified Professional Agronomist, C.C.A. on 12/7/11.

LABORATORY ANALYTICAL REPORT

Client:	Neal Fehringer	**Report Date:**	09/03/10
Lab ID:	B10082083-002	**Collection Date:**	08/20/10
Client Sample ID:	Manure - Storm Big Field pile	**Date Received:**	08/23/10

Manure Testing - CNMP Manure Package

Analyte	Dry Basis mg/kg	As Received Moisture Basis Percent	mg/kg	pounds/ton
Moisture	0.0	**24.2**		
Solids	100.0	75.8		
Total Kjeldahl Nitrogen	**10,400**	0.79	7,883	15.8
Nitrate as N	**252**	0.02	191	0.4
Nitrogen, Total as N	**10,652**	**0.81**	**8,074**	**16.1**
Phosphorus, Total as P	**3,720**	0.28	2,820	5.6
Phosphorus, as P_2O_5	**8,519**	**0.65**	**6,457**	**12.9**
Potassium, Total as K	**19,800**	1.50	15,008	30.0
Potassium, as K_2O	**23,760**	**1.80**	**18,010**	**36.0**

NOTES:
To adjust to a different moisture, divide the current value by the percent dry matter (expressed as a decimal), then multiply by the desired percent dry matter (also expressed in a decimal). For example, total nitrogen was 80 pounds per ton at 50% moisture and the usual spreading moisture is 45%, 80 divided by 0.50 = 160 pounds of total nitrogen per dry ton of manure. Then multiply 160 x 0.55 (% DM) = 88 total pounds of nitrogen per ton at 45% moisture.

For liquid or semi-liquid manure slurry you can calculate pounds per 1000 gallons by multiplying the pounds/ton concentration by 4.

mg/kg = ppm

Olsen's Agricultural Laboratory, Inc.

210 East 1st / PO Box 370 / McCook, Nebraska 69001
Office: 308-345-3670 / FAX: 308-345-7880
www.olsenlab.com

40050
NEAL FEHRINGER
FEHRINGER AG CONSULTING
7033 HIGHWAY 312
BILLINGS MT 59105 5027

NAME : CENTANA DATE RECEIVED: 11/07/2011 DATE REPORTED: 11/10/2011

SOIL TEST RESULTS

LAB NUMBER	FIELD IDENTIFICATION	SAMPLE IDENTIFICATION	Depth Inches	pH 1 : 1 Soil	pH Buffer Woodruff	LIME REC T/A 60% ECCE Legume	LIME REC T/A 60% ECCE Non Legume	EL	SOLUBLE SALTS mod. SP mmhos/cm	OM LOI %	NITRATE-N (FIA) ppm	NITRATE-N (FIA) lbs/A	PHOSPHORUS P1 ppm	PHOSPHORUS Bicarb ppm	PHOSPHORUS P2 ppm	PHOSPHORUS M2 ppm	PHOSPHORUS M3 ppm
986501	BIG	NORTH	0-6	7.9				M	0.64	2.3	10.5	19		129			
986502	BIG	NORTH	6-24								7.2	39					
986503	BIG	MIDDLE EAST	0-6	7.8				M	0.86	2.6	14.8	27		147			
986504	BIG	MIDDLE EAST	6-24								7.8	42					
986505	BIG	SE	0-6	7.8				L	0.96	2.5	15.4	28		146			
986506	BIG	SE	6-24								5.4	29					

LAB NUMBER	SULFATE-S Ca-P ppm	NH4OAc (Exchangeable) K ppm	Ca ppm	Mg ppm	Na ppm	DTPA Zn ppm	Fe ppm	Mn ppm	Cu ppm	BORON Sorbitol ppm	EST. CATION EXCHANGE CAPACITY (CEC) me/100g	% SATURATION BASE	H	Ca	Mg	K	Na
986501	11	394				4.0											
986502	14																
986503	17	542				4.8											
986504	16																
986505	12	558				4.4											
986506	17																

LAB NUMBER	SOLUBLE (SAT. EXT.) Ca me/L	Mg me/L	Na me/L	SODIUM ADSORPTION RATIO (SAR)	EXCH. SODIUM PERCENT (ESP)	GYPSUM REQ T/A	PARTICLE SIZE ANALYSIS SAND %	SILT %	CLAY %	SOIL TEXTURE	CHLORIDE ppm	CHLORIDE lbs/A	EXCH. NH4-N ppm	EXCH. NH4-N lbs/A	ALUMINUM ppm	TOTAL N %
986501																
986502																
986503																
986504																
986505																
986506																

SUGGESTED FERTILIZER RECOMMENDATIONS

LAB NUMBER	FIELD IDENTIFICATION	SAMPLE IDENTIFICATION	CROP TO BE GROWN	YIELD GOAL	N lbs/A	P2O5 lbs/A	K2O lbs/A	S lbs/A	Zn lbs/A	MgO lbs/A	Fe lbs/A	Mn lbs/A	Cu lbs/A	B lbs/A	Cl lbs/A
986501	BIG	NORTH													
986503	BIG	MIDDLE EAST													
986505	BIG	SE													

Analysis By: Olsen's Ag. Lab Recommendations By: Olsen's Ag. Lab

Olsen's Agricultural Laboratory, Inc.

210 East 1st / PO Box 370 / McCook, Nebraska 69001
Office: 308-345-3670 / FAX: 308-345-7880
www.olsenlab.com

40050
NEAL FEHRINGER
FEHRINGER AG CONSULTING
7033 HIGHWAY 312
BILLINGS MT 59105 5027

NAME : CENTANA DATE RECEIVED: 11/07/2011 DATE REPORTED: 11/10/2011

SOIL TEST RESULTS

LAB NUMBER	FIELD IDENTIFICATION	SAMPLE IDENTIFICATION	Depth Inches	pH 1 : 1 Soil	pH Buffer Woodruff	LIME REC T/A 60% ECCE Legume	LIME REC T/A 60% ECCE Non Legume	EL	SOLUBLE SALTS mod. SP mmhos/cm	OM LOI %	NITRATE-N (FIA) ppm	NITRATE-N (FIA) lbs/A	PHOSPHORUS P1 ppm	PHOSPHORUS Bicarb ppm	PHOSPHORUS P2 ppm	PHOSPHORUS M2 ppm	PHOSPHORUS M3 ppm
986507	BIG	SW	0-6	7.9				M	0.68	2.0	8.4	15		126			
986508	BIG	SW	6-24								4.6	25					
986509	STRIP		0-6	7.6				H	3.36	3.2	14.8	27		162			
986510	STRIP		6-24								12.6	68					
986511	YELLOW HOUSE		0-6	7.8				H	1.24	2.2	21.1	38		149			
986512	YELLOW HOUSE		6-24								6.0	32					

LAB NUMBER	SULFATE-S Ca-P ppm	NH4OAc (Exchangeable) K ppm	Ca ppm	Mg ppm	Na ppm	DTPA Zn ppm	Fe ppm	Mn ppm	Cu ppm	BORON Sorbitol ppm	EST. CATION EXCHANGE CAPACITY (CEC) me/100g	% SATURATION BASE	H	Ca	Mg	K	Na
986507	8	351				2.5											
986508	6																
986509	81	575				4.4											
986510	172																
986511	39	432				3.6											
986512	20																

LAB NUMBER	SOLUBLE (SAT. EXT.) Ca me/L	Mg me/L	Na me/L	SODIUM ADSORPTION RATIO (SAR)	EXCH. SODIUM PERCENT (ESP)	GYPSUM REQ T/A	PARTICLE SIZE ANALYSIS SAND %	SILT %	CLAY %	SOIL TEXTURE	CHLORIDE ppm	CHLORIDE lbs/A	EXCH. NH4-N ppm	EXCH. NH4-N lbs/A	ALUMINUM ppm	TOTAL N %
986507																
986508																
986509																
986510																
986511																
986512																

SUGGESTED FERTILIZER RECOMMENDATIONS

LAB NUMBER	FIELD IDENTIFICATION	SAMPLE IDENTIFICATION	CROP TO BE GROWN	YIELD GOAL	N lbs/A	P2O5 lbs/A	K2O lbs/A	S lbs/A	Zn lbs/A	MgO lbs/A	Fe lbs/A	Mn lbs/A	Cu lbs/A	B lbs/A	Cl lbs/A
986507	BIG	SW													
986509	STRIP														
986511	YELLOW HOUSE														

Analysis By: Olsen's Ag. Lab Recommendations By: Olsen's Ag. Lab

Olsen's Agricultural Laboratory, Inc.

210 East 1st / PO Box 370 / McCook, Nebraska 69001
Office: 308-345-3670 / FAX: 308-345-7880
www.olsenlab.com

40050
NEAL FEHRINGER
FEHRINGER AG CONSULTING
7033 HIGHWAY 312
BILLINGS MT 59105 5027

NAME : CENTANA DATE RECEIVED: 11/07/2011 DATE REPORTED: 11/10/2011

SOIL TEST RESULTS

LAB NUMBER	FIELD IDENTIFICATION	SAMPLE IDENTIFICATION	Depth Inches	pH 1 : 1 Soil	pH Buffer Woodruff	LIME REC T/A 60% ECCE Legume	LIME REC T/A 60% ECCE Non Legume	EL	SOLUBLE SALTS mod. SP mmhos/cm	OM LOI %	NITRATE-N (FIA) ppm	NITRATE-N (FIA) lbs/A	PHOSPHORUS P1 ppm	PHOSPHORUS Bicarb ppm	PHOSPHORUS P2 ppm	PHOSPHORUS M2 ppm	PHOSPHORUS M3 ppm
986513	HARRY		0-6	8.1				H	1.24	2.4	19.3	35		158			
986514	HARRY		6-24								23.8	129					

LAB NUMBER	SULFATE-S Ca-P ppm	NH4OAc (Exchangeable) K ppm	NH4OAc (Exchangeable) Ca ppm	NH4OAc (Exchangeable) Mg ppm	NH4OAc (Exchangeable) Na ppm	DTPA Zn ppm	DTPA Fe ppm	DTPA Mn ppm	DTPA Cu ppm	BORON Sorbitol ppm	EST. CATION EXCHANGE CAPACITY (CEC) me/100g	% SATURATION BASE	% SATURATION H	% SATURATION Ca	% SATURATION Mg	% SATURATION K	% SATURATION Na
986513	52	527				4.5											
986514	168																

LAB NUMBER	SOLUBLE (SAT. EXT.) Ca me/L	SOLUBLE (SAT. EXT.) Mg me/L	SOLUBLE (SAT. EXT.) Na me/L	SODIUM ADSORPTION RATIO (SAR)	EXCH. SODIUM PERCENT (ESP)	GYPSUM REQ T/A	PARTICLE SIZE ANALYSIS SAND %	PARTICLE SIZE ANALYSIS SILT %	PARTICLE SIZE ANALYSIS CLAY %	PARTICLE SIZE ANALYSIS SOIL TEXTURE	CHLORIDE ppm	CHLORIDE lbs/A	EXCH. NH4-N ppm	EXCH. NH4-N lbs/A	ALUMINUM ppm	TOTAL N %
986513																
986514																

SUGGESTED FERTILIZER RECOMMENDATIONS

LAB NUMBER	FIELD IDENTIFICATION	SAMPLE IDENTIFICATION	CROP TO BE GROWN	YIELD GOAL	N lbs/A	P2O5 lbs/A	K2O lbs/A	S lbs/A	Zn lbs/A	MgO lbs/A	Fe lbs/A	Mn lbs/A	Cu lbs/A	B lbs/A	Cl lbs/A
986513	HARRY														

Analysis By: Olsen's Ag. Lab Recommendations By: Olsen's Ag. Lab